1) \( \frac{3x^2 - 18x + 15}{5 + 4x - x^2} \) 
\( \frac{(3)(x^2 - 6x + 5)}{(-1)(x^2 - 4x - 5)} \)
\( \frac{(3)(x-5)(x+1)}{(-1)(x-5)(x+1)} \)
\( \frac{3(x-1)}{(-1)(x+1)} \)
\( 3x - 3 \)
\( -x - 1 \)
\( \text{P: } x \in \mathbb{R} \quad x \neq 5, -1 \)

2) \( \frac{(x^2+1)^{\frac{1}{2}} - x^2(x^2+1)^{-\frac{1}{2}}}{(x^2+1)} \)
\( (x^2+1)^{-\frac{1}{2}} - x^2(x^2+1)^{-\frac{3}{2}} \)
\( (x^2+1)^{-\frac{3}{2}} ((x^2+1) - x^2) \)
\( \frac{1}{(x^2+1)^{\frac{3}{2}}} \)
\( \text{rationalized:} \)
\( \frac{(x^2+1)^{\frac{1}{2}}}{(x^2+1)^2} \)

3) \( \frac{x^3}{x} = \frac{x^2 + 12x}{x} \)
\( x^2 + 12 = x \)
\( x^2 - x - 12 = 0 \)
\( x(x-4)(x+3) = 0 \)
\( x = -3, 4 \)
I did not catch the typo on problem #1 for my first period, so I did not grade simplification.

Should have been

\[
\frac{3x^2 - 18x + 15}{5 + 4x - x^2}
\]

Ash evaluated this quiz, so I've attached his solutions as well.
For full credit, you must show all work and circle your final answer.

1. Simplify and find the domain.

\[
\frac{3x^2 - 18x + 5}{5 + 4x - x^2}
\]

\[
\frac{3x^2 - 18x + 5}{-(x^2 - 4x - 5)} = \frac{3x^2 - 18x + 9}{-(x - 5)(x + 1)} \quad x \neq -1
\]

\[
x \neq 5
\]

or

\[(-\infty, -5) \cup (-1, 5) \cup (5, \infty)\]

2. Write as a single quotient without negative exponents.

\[
\frac{(x^2 + 1)^{1/2} - x^2(x^2 + 1)^{-1/2}}{(x^2 + 1)}
\]

\[
\frac{(x^2 + 1)^{1/2} - x^2}{(x^2 + 1)^{3/2}} = \frac{1}{(x^2 + 1)^{3/2}}
\]

3. Solve for x.

\[x^3 = x^2 + 12x\]

\[x^3 - x^2 - 12x = 0\]

\[x(x^2 - x - 12) = 0\]

\[x(x - 4)(x + 3) = 0\]

\[x \in \{0, 4, -3\}\]

University of Florida Honor Code:

On my honor, I have neither given nor received unauthorized aid in doing this assignment.

Signature